

SIMPLIFYING RADICAL EXPRESSIONS

Perfect Squares: 1, 4, 9, 16, 25, ____, ____, ____, ____, ____, ____, 144...

x^2, x^4, x^6, \dots Exponents must be _____.

$\sqrt{25}$ is read "the square root of 25".

$$\sqrt{25} = 5 \text{ because } 5^2 = 25 \quad \sqrt{36} = 6 \text{ because } \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \quad \sqrt{100} = \underline{\hspace{1cm}} \quad \sqrt{49} = \underline{\hspace{1cm}}$$

$$\sqrt{a^6} = a^3 \text{ because } (a^3)^2 = a^6 \quad \sqrt{m^{16}} = m^8 \text{ because } \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \quad \sqrt{y^{10}} = \underline{\hspace{1cm}} \quad \sqrt{a^2} = \underline{\hspace{1cm}}$$

Hint: Divide the exponent by _____.

In the expression \sqrt{a} , the $\sqrt{\hspace{0.5cm}}$ is called the radical and a is called the radicand.

Simplify (Simplifying Perfect Squares):

1. $\sqrt{4}$
2. $\sqrt{16}$
3. $-\sqrt{100}$
4. $\sqrt{a^8}$
5. $\sqrt{w^{12}}$
6. $\sqrt{a^6 b^{10}}$
7. $\sqrt{9a^2}$
8. $-\sqrt{81m^{64}}$
9. $\sqrt{49a^4 b^{12}}$
10. $\sqrt{121x^{14} y^6}$

Simplify (Simplifying Radicals that are not Perfect Squares):

1. $\sqrt{20} = \sqrt{4} \cdot \sqrt{5} = 2\sqrt{5}$
2. $\sqrt{27} = \sqrt{9}\sqrt{3} = 3\sqrt{3}$
3. $\sqrt{48} = \sqrt{16}\sqrt{3} = 4\sqrt{3}$
4. $\sqrt{45} = \sqrt{\hspace{0.5cm}}\sqrt{\hspace{0.5cm}} = \underline{\hspace{1cm}}\sqrt{\hspace{0.5cm}}$
5. $\sqrt{12} = \sqrt{\hspace{0.5cm}}\sqrt{\hspace{0.5cm}} = \underline{\hspace{1cm}}$
6. $\sqrt{50} = \underline{\hspace{1cm}}$
7. $\sqrt{a^5} = \sqrt{a^4}\sqrt{a} = a^2\sqrt{a}$
8. $\sqrt{x^9} = \sqrt{\hspace{0.5cm}}\sqrt{\hspace{0.5cm}} = \underline{\hspace{1cm}}$
9. $\sqrt{x^3} = \underline{\hspace{1cm}}$

Simplify:

1. $\sqrt{18}$
2. $\sqrt{125}$
3. $\sqrt{72}$
4. $\sqrt{180}$
5. $\sqrt{a^3}$
6. $\sqrt{b^7}$
7. $\sqrt{m^{11}}$
8. $\sqrt{75x^7 y^5}$
9. $\sqrt{27a^{11} b^7}$
10. $\sqrt{32a^7 b^4}$
11. $\sqrt{9a^8}$
12. $\sqrt{45a^7}$
13. $\sqrt{36x^2 y^6}$
14. $\sqrt{12x^{20} y^8}$
15. $-\sqrt{200}$
16. $\sqrt{196}$
17. $\sqrt{63x^4 y}$
18. $\sqrt{6x^3}$
19. $\sqrt{100x^5 y}$
20. $\sqrt{80x^{100} y^{49}}$

Homework Simplifying Radicals

Name _____

Class Time _____

Simplify each of the following expressions completely.

_____ 1. $\sqrt{64}$

_____ 2. $-\sqrt{18}$

_____ 3. $\sqrt{32}$

_____ 4. $\sqrt{50}$

_____ 5. $\sqrt{400}$

_____ 6. $\sqrt{x^6}$

_____ 7. $\sqrt{x^7}$

_____ 8. $\sqrt{16x^{16}}$

_____ 9. $\sqrt{9x^9}$

_____ 10. $\sqrt{40x^8}$

_____ 11. $\sqrt{25x^7}$

_____ 12. $\sqrt{12x^5}$

_____ 13. $\sqrt{a^2b^4}$

_____ 14. $\sqrt{49a^8x^{12}}$

_____ 15. $\sqrt{28x^9y^6}$

_____ 16. $\sqrt{32m^7n^{11}}$

_____ 17. $\sqrt{20x^{10}y^5}$

_____ 18. $\sqrt{100ab^4}$

_____ 19. $\sqrt{75x^8y^3}$

_____ 20. $\sqrt{98x^7y^5}$